



Shrewsbury Public Schools

Office Instructional Technology and Media Services

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Introduction

Information technologies impact nearly every aspect of society and continue to transform the lives of our entire Shrewsbury community. The technical skills needed for the 21st Century, as mentioned in our district's mission statement, create a sense of urgency for schools; we must change the way we prepare students to find, manage, analyze and present information. Teachers must also learn new instructional strategies in order to prepare their students for the rapidly changing world.

The 21st Century content includes:

- Global awareness
- Financial, economic, business and entrepreneurial literacy
- Critical-thinking and problem-solving
- Communication skills; creativity and innovation skills; collaboration skills
- Information and media literacy skills

There are several challenges facing our district today including those in the area of technology. The Department of Education has recognized many of these challenges and has provided Technical Benchmarks and Standards to serve as our guidelines.

DOE Benchmarks

The Department of Education has developed six benchmarks for districts to aspire towards:

1. Commitment to a Clear Vision and Mission Statement
2. Technology Integration
3. Technology Professional Development/Staff Training
4. Accessibility of Technology
5. Infrastructure for Connectivity
6. Access to the Internet outside the school day

Each of these benchmarks has a series of sub-categories that helped guide any budget decisions. Our entire five-year technology plan can be seen on the website at this URL:

<http://www.shrewsburyma.gov/schools/District/Technology/tp.html>

Benchmark #1: Commitment to a Clear Vision and Mission Statement

Our technology mission statement continues to provide direction to our departmental initiatives and support strategies.

Shrewsbury Public Schools is committed to the use of technology to create optimal learning opportunities for all students and staff. We strive to continuously improve our electronic infrastructure to supports the use of appropriate technology for curriculum, management, communications, and professional development. Shrewsbury Public Schools strives to be effective in the integration of technology into the process of teaching and learning.

Benchmark #2: Technology Integration:

The major aspect of this benchmark is the staffing component. Shrewsbury Public Schools does have a full-time equivalent (FTE) district-level technology director/coordinator. However, our recent budget cuts have resulted in the elimination of nine instructional technology and media staff members.

The DOE recommends that we provide our teachers with one FTE instructional technology teacher per 40-80 instructional staff. The 2006-2007 school year was the first year since 1984 when Shrewsbury had no FTE's dedicated to instructional technology integration specialists.

Benchmark #3: Technology Professional Development/Staff Training

The DOE currently requires districts to submit data on teacher professional development in the area of technology use as well as a teacher proficiency level. The entire survey can be seen on our website using the survey link off of the school department home page. Teachers were given time during a faculty meeting to answer 31 questions in the following 6 areas:

1. Technology Operations and Concepts
2. Planning and Designing Learning Environments and Experiences
3. Teaching, Learning, and the Curriculum
4. Assessment and Evaluation
5. Productivity and Professional Practice
6. Social, Ethical, Legal, and Human Issues

This year we had 284 respondents (69% teachers, 24% specialists, 7% administrators/directors). We use these results to shape our professional development offerings, as well as guide our hardware and software purchases.

Each year the last multiple-choice question of the survey is a self-assessment of teachers' technology adoption. Teachers must assess their own level - Early,

Developing, Proficient and Advanced in the use of technology. The proficient level is as follows:

Proficient – *I confidently use technology as a tool for research, lesson planning, multimedia presentations and /or simulations. Technology is integrated into my lessons, and I facilitate my students in the use of scanners, digital cameras, and mobile wireless technology where applicable.*

While the DOE recommends that 60% of our staff should be at the proficient level, the fall 2006 self-assessment report of SPS teachers showed 24% at this level.

The survey allows for teacher comments regarding factors most influencing their decision to use technology, professional development and any other concerns. Narrative survey results are very time consuming to analyze; however, there were some revealing commonalities. Teachers reported the following concerns and needs:

- Lack of school issued laptops for some teachers
- Return of the integration positions return (K-4 level)
- Access to newer technology
- Access to more mobile technology
- Access to more projection devices
- Workshops and graduate courses in technology integration

We have already made progress on many of these issues. Two graduate level technology integration courses were held on site this year.

As our district moves forward, the following chart shows the discrepancy in the shared resources by site, which speaks to the teachers concerns about access to mobile technology and lab spaces.

Site Based Shared Resources: Labs and Mobile Carts

	Beal	Coolidge	Floral	Paton	Spring	Sherwood	Oak	SHS
Carts*	0	1	2	1	1	2	13	7
Open Labs	0	0	0	0	0	.5	1	3.5
Assigned Labs	0	0	0	0	0	1.5	1	4.5
Media Center**	0	0	0	0	0	1	1	1

* None of our current mobile carts have a 1 to 1 ratio based on class size (7-14 units) and at most of elementary and Sherwood category C computers (low end) dominated each cart.

** Schools that do not have media center labs do have some computers for library circulation and basic research with out media assistants.

Benchmark #4 -Accessibility of Technology: This benchmark has several components relating to the FY08 budget request.

The DOE currently recommends an average ratio of fewer than five students per high-capacity, Internet-connected computer. DOE also requires districts to submit their inventory by category, on an annual basis. In 2006, DOE has set the following criteria for each category of computer.

Type A (high-end)	Type B (average)	Type C (low-end)
Function: Multimedia-capable of running virtually all current software, including the latest video and graphic programs	Function: Multimedia-capable of running most software, except for the latest video and graphic programs	Function: Multimedia-capable of running most current productivity applications
Memory: 256 MB RAM or more	Memory: 128 -256 MB RAM	Memory: less than 128 MB Ram
Processor: PC- Pentium 4 Macintosh- G4/G5	Processor: PC- Pentium 3 Macintosh- G3	Processor: PC- Pentium 2 or lower Macintosh- PowerPC

The following chart represents our current inventory by site and by DOE Category. The Oak inventory is entirely Type A as result of the recent renovation project. Half of our district inventory falls into the Type B classification, most of which are at the lower end of the category. Additionally all Type B's at the high school are in their fifth year of use. Type C computers are much more limiting than the description implies. A disproportionate number of Type C units are at Floral Elementary School.

School	Type A	Type B	Type C	Site Based Total
Beal/Beal West	15	48	4	67
Coolidge	24	107	3	134
Floral	33	121	51	205
Oak*	398	0	0	398
Parker Road	7	17	0	24
Sherwood	71	140	20	231
SHS	274	336	0	610
Spring	17	84	8	109
Paton	19	97	3	119
District Totals	858	950	89	1897
District Percentages	Type A=45%	Type B=50%	Type C=5%	

The latest data reported to and by DOE for Shrewsbury Public Schools is a ratio of 4.5 students per Type A/B computer. This currently falls within the recommended state ratio.

	Parker	Beal	Coolidge	Floral	Paton	Spring	Sherwood	Oak	SHS
Students	176	413	328	749	357	403	951	948	1568
A/B Computer Ratio*	7.3	6.5	2.5	4.9	3.1	3.9	4.3	2.4	2.6

*includes teacher laptops which students do not normally have access to

The DOE is considering raising the recommended benchmark ratio to 1:1 for 2010. The DOE recommends that all districts establish a computer replacement cycle of six years or less. A replacement plan is presented later in this report. Technical support for accessibility for technology has three noteworthy recommendations:

The DOE recommends the districts employ a full-time (1 FTE) network administrator. We have always had network administration support; but it was a shared position between several technology staff and outside consultants (friends of Shrewsbury). The FY08 budget formally requests the addition of a full year FTE network administrator. This request is a step in the correct direction, but falls short of what is needed, as the network administrator will not be relieved of his daily technical support to staff and students. This can only be achieved by the addition of another technical support staff person.

The DOE also recommends one full time (1 FTE) person to support each group of 100-200 computers. The following chart shows our current technical support model and district average. Shrewsbury also supplements our support model by contracting with Computer Exchange for the repair beyond our current capacity.

	Parker	Beal	Coolidge	Floral	Paton	Spring	Sherwood	Oak	SHS
TOTAL Computers	24	67	134	205	119	109	231	398	610
Technical Support Staff	5 Technical Support staff and contracted vendor maintain 1897 computers. Our ratio is 350 computers per technical support staff member which includes .4 FTE assigned to our contract vendor.								

Our commitment to timely in-classroom technical support hasn't changed; our ability to deliver that has been stressed due to increased enrollment and staff reductions in the past two years. Technical problems have caused some disruptions in curriculum delivery.

Benchmark #5: Infrastructure for Connectivity

Our desire to re-instate the Virtual High School experience for our students falls under this benchmark. The current network is more than capable of supporting this initiative; however, the hardware components that support the infrastructure are approaching their sixth year of use. Tom Josie will be reconvening the town network team to discuss an evaluation of existing network. In the past, consultants have been brought in to design/redesign our network and recommend new hardware that will serve the town/school for the next five-six years. The costs of these improvements have been cost shared over a period of time between the three organizations that make up the town network team: town, schools, and SELCO.

Benchmark #6: Access to the Internet outside the school day

The district maintains an up-to-date web site that includes information for parents and works with community groups to ensure that students and staff have access to the Internet outside of the school day. The district web site includes an up-to-date list of places where students and staff can access the Internet after school hours.

DOE Technology Standards:

The Department of Education recently collapsed the six National Education Technology Standards for students (NETS- <http://cnets.iste.org/>) into three broad categories listed below.

1. **Basic Operations and Productivity Tools:** tools such as word processing, spreadsheet, database, electronic research, e-mail, and applications for presentations and graphics. It also includes conceptual understandings of the nature and operation of technology systems.
2. **Ethics, Society, and Safety:** positive attitudes toward the uses of technology and responsible use of information. In this standard, we want to ensure that students understand how to protect their personal identity and information on the Internet and the general rules for Internet safe practices.
3. **Research, Problem Solving, and Communications:** ensures students will learn to apply a wide range of technology tools to their learning and everyday life as well as:
 - Critical Thinking and Information Processing with Technology
 - Technology-based Communications
 - Application of Technology

The level of student immersion in the area of technology varies across the state; as a result, DOE has identified technology standards for each grade-level cluster. DOE has provided specific standards for what students should know and be able to do by the end of each grade.

Grade Level Clusters	Performance Indicators
K-2	Anticipated Changes A- Awareness D- Developing M- Mastery E- Extended
3-5	
6-8	
9-12	

The current standards can be found on the technology webpage by selecting DOE Tech Competencies. Revisions to the standards are due out this spring.

Beginning this fall, all districts had to report to the DOE the number of eighth grade students who have met the technology standards according to section 2402 of the NCLB. Additionally DOE asked for the same data for grade 4 and 12 students. All districts have struggled to assess the standards at the three grade levels requested. After interviewing classroom teachers and remaining media specialists, our grade 4 and grade 12 submissions could be classified as "best guesses." In grade 8, we used the same techniques and PowerSchool to give a more accurate assessment- 60% has mastered nearly all of them and 30% have mastered half of them.

The ITAMS Visiting Team (Nov. 2004) commended our district for our middle school offerings. After presenting our offerings at the annual DOE Spring Conferences in 2004, several districts have moved toward this allied art sequence as a means of addressing the standards for all Grade 8 students. This year, the budget could not sustain all of the allied arts offerings and the Grade 8 computer competency experience was eliminated. Digital Storytelling was moved to Grade 7 and databases and spreadsheets were eliminated from the curriculum.

Allied Arts 30-day Rotations

Grade 5	Grade 6	Grade 7	Grade 8
Keyboarding and Word Processing	PowerPoint and Presentation Techniques	Databases and Spreadsheets* * eliminated	Digital Storytelling with iMovie** ** moved to Grade 7

Because the DOE asks for Grade 4 and 12 data (when previously only Grade 8 was required) suggests that districts will soon have to report proficiency levels on the technology standards for all grades. Given the current constraints on the budget and previous year's staff reductions, it will be nearly impossible to assess these standards in any grades other than at our middle school. Shrewsbury will not be alone in this shortcoming.

FY08 Budget Request

Staffing Request:

Although reinstatement of the media specialists, an alternative integration support model and additional tech support are all recommended, only the full-year network manager position is included in the FY08 Budget for school committee consideration. This position must be full year to meet the technical demands of our district. The cost to the FY08 budget to support initiative is \$7,000.

Hardware Replacement Plan:

The DOE recommends a replacement plan of a six year or less cycle for technology. Currently we do not have such a line item in the budget. Several years ago, 25% of the districts in the state reported having a replacement plan, while last year that number approached 50%. This hasn't been as visible an issue in Shrewsbury due to the influx of technology dollars from our building projects. Floral, which opened in 1997, has had 75% of its inventory replaced in the past several years due in part to reallocations and new purchases. Our current budget strategy of replacing technology through the regular budget procedure with existing funds is not sufficient. Twenty-five percent of the Floral inventory is ten years old.

As a means of stabilizing the budget and allowing for proper fiscal planning for the business manager and technology department, leasing computers with a level funded line item has been explored. In November 7th, the district held a leasing seminar with GE Financial Services. Several options were discussed and the most feasible solution for Shrewsbury Public Schools was a three-year equity lease to own.

The basics of this option are that all the equipment arrives in the first year and is paid for over three years. After the first payment is made, Shrewsbury has the option to extend the lease for an additional year based on the equity. Here's how it looks in chart form using a base price of \$1200 per unit – desktops cost less, laptops a bit more all with three year extended warranty.

Timeline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Original Lease	\$300,000					
Equity	\$0	\$100,000	\$100,000	\$100,000	\$100,000	
Total Units	250	83	83	83	83	
Running Total	250	333	416	499	582	582
Annual Amt.	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000

Even with a \$300,000 influx of technology, that amount falls short of a true six-year replacement plan. The plan is based on the following:

- All teachers should have a laptop
- A minimum standard of G3 processor needs to be established for 2007.
- New units should be expected to last five years
- The removed equipment should be re-purposed if possible.
- Teachers should have access to mobile technology with a student computer ratio of 2 to 1
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In the months before the budgets gets finalized, we will work with the school leadership team to refine the purchase/reallocation plan as well as develop summer timelines for tech staff to prepare these units for distribution for the fall of 2007.

Conclusion:

We understand the constraints of the budget, but these requests are in keeping with the guidelines developed by the school committee. Technology is not only a slice of the pie, but it is also the pie tin. A musician friend, Monty Selby, sums it up best with these lyrics.

*In our hands, there is power to create
In our hearts, ambition to embrace
We can look down the road to a future
Draw a blueprint that will guide us today
Join the vision of leaders becoming the Architects of Change.*